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| APPLICATION NO.           | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|---------------------------|-------------|----------------------|----------------------|------------------|
| 10/603,462                | 06/25/2003  | Thaddeus Schroeder   | DP-306034            | 3284             |
| 22851                     | 7590        | 12/28/2005           | EXAMINER             |                  |
| DELPHI TECHNOLOGIES, INC. |             |                      | WHITTINGTON, KENNETH |                  |
| M/C 480-410-202           |             |                      | ART UNIT             |                  |
| PO BOX 5052               |             |                      | PAPER NUMBER         |                  |
| TROY, MI 48007            |             |                      | 2862                 |                  |

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                    |                                  |  |
|------------------------------|------------------------------------|----------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/603,462      | Applicant(s)<br>SCHROEDER ET AL. |  |
|                              | Examiner<br>Kenneth J. Whittington | Art Unit<br>2862                 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2005.
- 2a) ☒ This action is FINAL.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14 and 15 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-9, 16, 17, 23-25 and 34-39 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 10-13, 18-22, 26-33 and 40-45 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

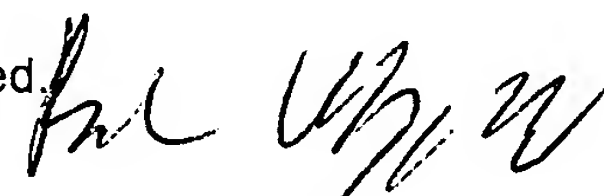
### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.



**Bot Ledynh**  
Primary Examiner

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

The Amendment filed November 1, 2005 has been entered and considered.

***Response to Arguments***

6 Applicant's arguments with respect to the claims have been fully considered and are persuasive in part. In view thereof, the rejections of those claims as being anticipated by Honda (US 5,327,077), Von Borke (US 3,934,160), Hini (US 4,041,371), Van Antwerp et al. (US 4,737,710) and those claims being obvious over Rhodes et al. (US 6,509,732) in view of Schroeder (US 12 6,498,482) and Hini in view of Yamazaki et al. (EP1003040) are hereby withdrawn.

It is noted that Applicant has filed a petition to claim priority to the Lequesne et al. application (10/356,457) as a continuation in part. However, it is understood the petition was dismissed. Accordingly, Lequesne et al. will remain as a 18 reference against the application.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4 is rejected under 35 U.S.C. 112, second paragraph,  
6 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding this claim, it is noted that the recitations are impossible in some circumstances. Claim 1 recites that the target can only have a width equal to or less than the spacing between adjacent sensors. Claim 4 then recites  
12 the target comprising two teeth with a target spacing and further goes on to state the target spacing is equal to or less than half the distance between the first and last sensor. Because the target itself has a limited width, its two teeth therein and the target spacing are equal to this limited width and no more. However, claim 4 contemplates a linear array which  
18 can have more than 3 sensors, i.e., 5. If the target spacing is half the distance between the first and last sensor, the target spacing would start at the first sensor and extend to the third, covering the second sensor. This means the target spacing would be greater than the width between the first and second sensor, and would be inconsistent or impossible in view of the language  
24 of claim 1. Accordingly, claim 4 fails to provide a definite scope.

***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 7, 8, 16, 17, 23-25, 34, 35, 36, 38 and 39 are  
6 rejected under 35 U.S.C. 102(e) as being anticipated by Lequesne  
et al. (US 2004/0150393). In view of the dismissal of the  
petition to claim priority to the Lequesne et al.  
patent/application, Lequesne et al. will remain a prior art  
reference. Regarding claims 1 and 23, Lequesne et al. discloses  
a position sensor comprising:

12 a linear array of at least three galvanomagnetic sensing  
elements (See Lequesne et al. FIG. 1, items 16);

a target moving adjacent a surface of the linear array in  
response to movement of the device, the target shaped so that a  
magnetic flux density curve resulting from excitation of the  
sensing elements includes at least one of a peak and a valley  
18 (See FIG. 1, item 22 and FIG. 9), the magnetic flux density  
curve comprising a density at each sensing element (See FIGS. 9-  
12) and wherein a width of the target is equal to or narrower  
than a distance between adjacent sensing elements (See FIG. 2,  
note spacing of elements 16 and width of target 22);

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a first circuit for exciting each of the sensing elements  
(See FIG. 13, items 60 and 62); and

a second circuit for measuring a magnetic flux density  
value at each of the sensing elements (See FIG. 13, items 64,  
66, 68),

6 wherein at least one of a maximum of the peak and a minimum  
of the valley indicates one of the linear position and the  
angular position of the device (See FIGS. 9 and 10).

Regarding claim 2, Lequesne et al. discloses the sensors  
being magneto-resistive sensors (See page 2, paragraph 0022).

12 Regarding claim 3, Lequesne et al. discloses the target  
being a magnetic tooth or slot (See definition of such features  
at present application, paragraph 0025 and see Lequesne et al.  
FIGS. 1, 9 and 10, item 22 and note peak in graph).

18 Regarding claims 7, 8, 34 and 35, Lequesne et al. discloses  
a voltage or current source biasing the sensors and voltage  
potential is measured across each sensor representing flux  
density (See FIG. 13 and paragraphs 0026-0028).

Regarding claims 16, 17, 36, 38 and 39, Lequesne et al.  
discloses measuring the maximum peak or minimum valley measured  
at certain sensing elements (See page 3, paragraph 0028).

Regarding claim 24, Lequesne et al. disclose mounting the  
sensor arrangement in a rack and pinion steering device which

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requires mounting the target and linear array directly in the device (See page 2, paragraph 0023).

Regarding claim 25, Lequesne et al. discloses connecting a non-magnetic mount to the device and etching or depositing the target onto the nonmagnetic substrate (See page 2, paragraph 0023).

### *Claim Rejections - 35 USC § 103*

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 9 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lequesne et al. in view of Rhodes et al. (US6,509,732). Lequesne et al. teaches the features noted above except for the side offset compensation. Rhodes et al. teaches of compensating for errors relating to side-offset measurements (See Rhodes et al. col. 3, line 65 to col. 4, line 11 referring to the various embodiments of the invention). It would have been obvious at the time the invention was made to incorporate the side offset compensation as taught by Rhodes et al. in order to prevent errors during measurements due to mechanical offsets.

### *Allowable Subject Matter*

Claims 14 and 15 are allowed.

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The following is an examiner's statement of reasons for allowance: these claims are allowed for the reasons contained in the previous Office Action.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to  
6 avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 5, 6, 10-15, 18-22, 26-33 and 40-45 are objected to as being dependent upon a rejected base claim, but would be  
12 allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 4 is also objected to, but would also be allowable if it were written in independent form and the indefiniteness rejection noted above is overcome.

The following is a statement of reasons for the indication  
18 of allowable subject matter:

Regarding claims 4, 20, 21, 22, 43, 44 and 45, the prior art does not show a pair of magnetic teeth or slots in combination with the other features of the claims.

Regarding claims 5 and 32, the prior art does not show the target being positioned at the fixed angle in the manner recited



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in the claims and in combination with the other features of the claims.

Regarding claims 6, 10, 11, 12, 13, 26, 27, 28, 29, 30, 31 and 33, the prior art does not show a spiral tooth or slot target or the target moving normal to the array in the manner recited in these claims and in combination with the other features of the claims.

Regarding claims 18, 19, 40, 41 and 42, these claims have allowable subject matter for the reasons contained in the previous Office Action.

12

### ***Conclusion***

Applicant's amendment necessitated the new/amended grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

18

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will

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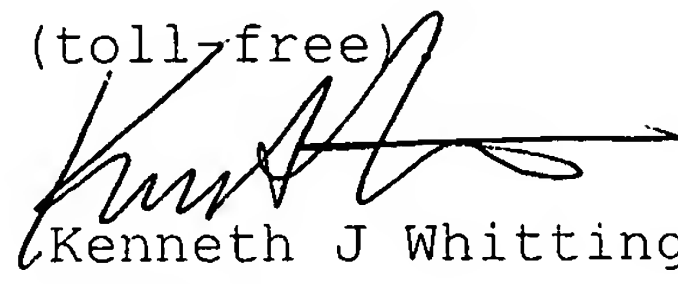
expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6        Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Whittington whose telephone number is (571) 272-2264. The examiner can normally be reached on Monday-Friday, 7:30am-4:00pm.

12        If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)



Kenneth J Whittington  
Examiner  
Art Unit 2862